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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Takao Takiguchi

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12/09/2003

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1774

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

021

Office Action Summary

Application No.

09/961,075

Applicant(s)

TAKIGUCHI ET AL.

Examiner

Marie R. Yamnitzky

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1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/26/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-7,10-12,14,16-18 and 21-47 is/are pending in the application.
- 4a) Of the above claim(s) 21-25 and 40-43 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-35,38 and 39 is/are allowed.
- 6) ☒ Claim(s) 1,3,5-7,10-12,14,16-18,26,27,36,37 and 44-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. This Office action is in response to applicants' amendment received September 26, 2003 (Paper No. 10), which amends the abstract and specification, cancels claims 2, 4, 8, 9, 13, 15, 19 and 20, amends claims 1, 3, 5, 6, 12, 14, 16 and 17, and adds claims 26-47.

This Office action is also in response to the certified translations received September 26, 2003 for the six foreign priority applications.

Claims 1, 3, 5-7, 10-12, 14, 16-18 and 21-47 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. The claims remain subject to an election of species requirement. The elected species is a compound of formula (1)/device comprising a compound of formula (1) in which M is Ir. Present claims 1, 3, 5-7, 10-12, 14, 16-18, 26-39 and 44-47 read on the elected species. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election **without** traverse (MPEP § 818.03(a)).

Claims 21-25 and 40-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

3. Claims 1, 3, 5-7, 10-12, 14, 16-18, 26 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably

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convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The application as originally filed provides insufficient support for the negative proviso set forth in independent claims 1 and 12 excluding compounds of formula (1) in which “not more than one of X_1 - X_4 is a fluorine atom”. The examiner does not find this limitation explicitly set forth in the application as originally filed. While the original disclosure does disclose some specific compounds within the scope of the excluded subgenus of compounds, the negative limitation has the effect of excluding compounds not disclosed in the original disclosure and therefore introduces new matter.

The examiner does not find the specific compound defined in claim 26, with claim 27 dependent therefrom, disclosed in the application as originally filed.

4. Claims 46 and 47 are rejected under 35 U.S.C. 102(e) as being anticipated by Grushin et al. (US 2002/0121638 A1).

Grushin's compound 1-a is a metal coordination compound represented by the formula set forth in present claim 46. The compound is disclosed for use in a luminescence device. See the whole published application. In particular, see Table 1 and paragraphs [0118]-[0124].

5. Claims 1, 3, 5-7, 10-12, 14, 16-18, 36, 37, 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grushin et al. (US 2002/0121638 A1).

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Grushin et al. disclose iridium coordination compounds for use in electroluminescent devices. Substituted tris(phenylpyridine)iridium compounds are among the preferred compounds. The phenyl ring of the ligand has 0-4 substituents and the pyridine ring has 0-4 substituents, provided there is at least one fluorine or fluorinated group on the ligand. See the whole published application. In particular, see paragraphs [0008]-[0021], [0038]-[0048] and [0118]-[0125].

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make iridium complexes suggested by Grushin et al. other than the specifically disclosed complexes. One of ordinary skill in the art would have been motivated to make iridium complexes suggested by Grushin et al. other than those specifically disclosed in order to obtain a variety of iridium complexes suitable for use in an electroluminescent device. For example, one of ordinary skill in the art at the time of the invention would have reasonably expected that compounds similar to Grushin's compounds 1-b, 1-c, 1-d, 1-e, 1-f, 1-g, 1-i, 1-j, 1-k or 1-l, having at least one additional substituent on the phenyl ring wherein the additional substituent is selected from the "conventional substituents" taught in paragraph [0039] would be suitable for use as a light-emitting material in an electroluminescent device. As another example, one of ordinary skill in the art would have reasonably expected that compounds similar to Grushin's compounds 1-s, 1-t or 1-u having a CF₃ substituent in place of each F substituent would be suitable for use as a light-emitting material in an electroluminescent device since Grushin teaches that fluorine and fluorinated groups are equally suitable as substituents. Compounds similar to Grushin's compounds 1-s, 1-t or 1-u having a CF₃ substituent in place of

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each F substituent are compounds within the scope of present formula (1) in which two of X_1 - X_4 represent a trifluoromethyl group and, in the case of 1-t or 1-u, one of X_5 - X_8 represents a trifluoromethyl group, all other X's representing hydrogen atoms. These compounds and other compounds within the scope of the present claims are suggested by the prior art.

With respect to claims 5-7 and 16-18, various substituents suggested by Grushin et al. are capable of providing compounds meeting the Hammett's substituent constant limitation set forth in these claims. For example, a CF_3 substituent at either of positions X_2 or X_4 has a Hammett's substituent constant of 0.47 while a CF_3 substituent at position X_3 has a Hammett's substituent constant of 0.54. Also see paragraphs [0038]-[0039] of the prior art. Fluorine and the fluorinated groups suggested by Grushin et al. are electron-withdrawing and therefore have a Hammett's substituent constant greater than zero. Some of the conventional substituents suggested in paragraph [0039], such as alkyl groups, are electron-donating and have a Hammett's substituent constant less than zero. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable combinations of substituents selected from the substituents suggested by Grushin et al. in order to provide a compound having the desired characteristics. With respect to the peak emission wavelength, one of ordinary skill in the art would have been motivated to select a combination of substituents suitable for providing a compound emitting light of the color desired for a particular end use.

6. Claims 1, 3, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 2002/0034656 A1).

See paragraphs [0169]-[0171] in particular. Thompson et al. suggest substituted tris(phenylpyridine)iridium compounds for use in a luminescence device wherein the phenyl ring and/or the pyridine ring may be substituted with one or more substituents. Based on Thompson's teachings in paragraph [0171] regarding preferred substituents and preferred substitution positions, substituted tris(phenylpyridine)iridium compounds having two alkyl substituents on the phenyl ring and up to two alkyl substituents on the pyridine ring would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention.

This subject matter has an effective U.S. filing date of May 13, 1999, having been disclosed in Thompson's priority application, U.S. application No. 09/311,126.

7. Claims 1, 3, 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1).

Igarashi et al. disclose various iridium complexes for use as light-emitting materials in electroluminescent devices. Igarashi et al. do not explicitly disclose compounds meeting the limitations of an iridium compound as represented by formula (1) in present independent claims 1 and 12, but such compounds are suggested. For example, see Formula (13) on page 8 of the published application and paragraphs [0070]-[0076].

The compounds of present formula (1) are tris(phenylpyridine)iridium complexes. Compounds of formula (13) where m_3 is 3 as taught by Igarashi et al. are tris(phenylpyridine)iridium complexes. Igarashi et al. teach that the phenyl ring of the phenylpyridine ligand may have 0-4 substituents, and the pyridine ring may have 0-4

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substituents. The most preferred substituent is an alkyl group as taught in paragraph [0071] but, as taught in paragraph [0070], other substituents may be used. Paragraph [0050] sets forth other possible substituents.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make iridium complexes suggested by Igarashi et al. other than the specifically disclosed complexes. One of ordinary skill in the art would have been motivated to make iridium complexes suggested by Igarashi et al. other than those specifically disclosed in order to obtain a variety of iridium complexes suitable for use in an electroluminescent device. One of ordinary skill in the art would have reasonably expected that other compounds suggested by Igarashi et al. would have been suitable for use as light-emitting materials in electroluminescent devices.

8. Applicants' arguments filed September 26, 2003 have been fully considered but they are not persuasive.

As noted above, Grushin's published application anticipates the subject matter of new claims 46 and 47. Grushin's compound 1-a and a luminescence device comprising compound 1-a are disclosed in both of Grushin's priority provisional applications, thus having an effective U.S. filing date prior to applicants' earliest foreign priority date.

It is the examiner's position that other pending claims as rejected above are rendered obvious by Grushin's teachings which are supported by Grushin's priority provisional applications. In addition, while Grushin's compounds 1-s, 1-t and 1-u are not explicitly

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disclosed in Grushin's priority provisional applications, the examiner notes that compounds similar to these compounds having a CF_3 substituent in place of each F, while being within the scope of the present claims, are outside the scope of the compounds disclosed in applicants' four foreign priority applications that predate the U.S. filing date of Grushin's non-provisional application.

With respect to Thompson's published application, the portion explicitly relied upon by the examiner in previously rejecting some of the original claims under 35 U.S.C. 102(e) does not anticipate or render obvious any of the present claims. A different portion of Thompson's disclosure is relied upon in rejecting claims under 35 U.S.C. 103(a) in this action and therefore this action is not a final rejection. The portion relied upon is supported by one of Thompson's priority applications that has a U.S. filing date prior to applicants' earliest foreign priority date.

With respect to Igarashi's published application, it is the examiner's position that Igarashi et al. suggest compounds not fully supported by present applicants' foreign priority documents having filing dates prior to the U.S. filing date of Igarashi's application. Of the six foreign priority documents, 292493/2000 and 358742/2000 pertain only to compounds of formula (2), 292492/2000 and 358741/2000 disclose only a portion of the compounds encompassed by formula (1) as defined in present independent claims 1 and 12, and 284599/2001 and 255537/2001 do not predate the U.S. filing date of Igarashi's application. In addition, none of the foreign priority applications provide sufficient support for the exclusion of the subgenus of compounds of formula (1) in which not more than one of $\text{X}_1\text{-X}_4$ is a fluorine atom.

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9. Claims 28-35, 38 and 39 are allowed.

10. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY
December 08, 2003



MARIE YAMNITZKY
PRIMARY EXAMINER

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